Vaughn, Lorena

From: Murdock, James
Sent: Thursday, October 19, 2017 1:53 PM
To: Amandes, Christopher B.
Subject: RE: Corrected Third Response to EPA September 7 Information Request

Thanks. I'm available now.

From: Amandes, Christopher B. [mailto:christopher.amandes@morganlewis.com]
Sent: Thursday, October 19, 2017 1:42 PM
To: Murdock, James <Murdock.James@epa.gov>
Cc: Bernier, Roberto <bernier.roberto@epa.gov>; Stucky, Marie <Stucky.Marie@epa.gov>; Thompson, Steve <thompson.steve@epa.gov>; Sullivan, Greg <Sullivan.Greg@epa.gov>; Miles, James <miles.james@epa.gov>; Haas, Craig <Haas.Craig@epa.gov>; Quiroz Guadalupe_TCEQ <Guadalupe.quiroz@tceq.texas.gov>; Jason.Holloman@tceq.texas.gov; derek.mangold@tceq.texas.gov; Craig.Hill@pcs.hctx.net
Subject: Corrected Third Response to EPA September 7 Information Request

Because of a production error, the third page of Arkema's third response to EPA's information request was inadvertently omitted when that document was produced on October 6. Attached is a complete third response.

Please let me know if you have any questions.

Chris

Christopher B. Amandes
Morgan, Lewis & Bockius LLP
1000 Louisiana Street, Suite 4000 | Houston, TX 77002
Direct: +1.713.890.5735 | Mobile: +1.832.646.3702 | Fax: +1.713.890.5001
christopher.amandes@morganlewis.com | www.morganlewis.com
Assistant: Renetta Parham | +1.713.890.5740 | renetta.parham@morganlewis.com

Vaughn, Lorena

From: Murdock, James
Sent: Thursday, October 19, 2017 1:46 PM
To: Adams, Janet
Subject: FW: Corrected Third Response to EPA September 7 Information Request
Attachments: ARK_EPA_0000797.pdf

From: Amandes, Christopher B. [mailto:christopher.amandes@morganlewis.com]
Sent: Thursday, October 19, 2017 1:42 PM
To: Murdock, James <Murdock.James@epa.gov>
Cc: Bernier, Roberto <bernier.roberto@epa.gov>; Stucky, Marie <Stucky.Marie@epa.gov>; Thompson, Steve <thompson.steve@epa.gov>; Sullivan, Greg <Sullivan.Greg@epa.gov>; Miles, James <miles.james@epa.gov>; Haas, Craig <Haas.Craig@epa.gov>; Quiroz Guadalupe_TCEQ <Guadalupe.quiroz@tceq.texas.gov>; Jason.Holloman@tceq.texas.gov; derek.mangold@tceq.texas.gov; Craig.Hill@pcs.hctx.net
Subject: Corrected Third Response to EPA September 7 Information Request

Because of a production error, the third page of Arkema's third response to EPA's information request was inadvertently omitted when that document was produced on October 6. Attached is a complete third response.

Please let me know if you have any questions.

Chris

Christopher B. Amandes
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Direct: +1.713.890.5735 | Mobile: +1.832.646.3702 | Fax: +1.713.890.5001
christopher.amandes@morganlewis.com | www.morganlewis.com
Assistant: Renetta Parham | +1.713.890.5740 | renetta.parham@morganlewis.com

Arkema's Third Response to EPA Information Request Pursuant to the Clean Air Act Section 114(a), for the Arkema Crosby Plant, received Sept. 7, 2017

III. QUESTIONS

1. Please provide a detailed description and timeline of the event. Include the best known start time and duration of the incident. The timeline should address in detail the following events as well as any other relevant points:

   a. Primary power failure.

   b. Use of backup power supply and subsequent failure.

   c. Use of liquid nitrogen and related equipment and subsequent failure.

   d. Removal of organic peroxides material to each of the nine refrigerated trailers, and which specific organic peroxides materials were placed in each trailer.

   e. Relocation of each of the nine refrigerated trailers.

   f. Temperature readings on each of the nine trailers.

   g. Failure of primary and backup refrigeration systems in trailers.

   h. Initial ignition and combustion of materials in each of the nine trailers.

   i. Controlled burn of each trailers.

   j. Other emergency response activities.

RESPONSE:

Please refer to the preliminary timeline of the event that was submitted with Arkema's initial response on September 18. An Enhanced Timeline was provided with the second response – Hurricane Harvey Event and Materials Provided to EPA and Unified Command.

This third response provides additional information in response to Question 1(f), namely, temperature readings from those trailers from which temperature readings were received. Three trailers were not equipped with remote temperature monitoring equipment.

2. Please provide any documents associated with the identification of hazards posed by organic peroxides at your facility, operating procedures related to organic peroxides, and procedures related to flood, hurricane, loss of power, and emergency operations, and shutdown.

RESPONSE:

Please refer to the Safety Data Sheets for the organic peroxides at the Crosby facility that require refrigerated storage, Emergency Response Plan, Hurricane Preparedness Plan, Risk Management Plan, and Process Hazard Analysis for Organic Peroxide Storage that were submitted with Arkema's initial response on September 18. Submitted with the second response were the Crosby Plant Products Storage Directory, Storage Building Limits and Safety Guidelines procedure, and Nitrogen Transfer Procedure.

No additional information is being submitted with this third response in response to Question 2.

3. What are the names and Chemical Abstract Service (CAS) Numbers of the organic peroxides moved to the refrigerated trailers?

a. How and where are organic peroxides normally stored at the facility?

b. How much organic peroxides are stored at the facility at any one time?

c. What layers of protection or other release prevention measures are in place for the storage of organic peroxides on site?

d. Under what conditions are organic peroxides moved to refrigerated trailers? Prior to the incident, when and for how long did you store materials, including organic peroxides, in refrigerated trailers?

e. Are organic peroxides ever moved off site for safe storage? If so, where are they moved, and what conditions trigger such movement?

RESPONSE:

Please refer to the Safety Data Sheets for the organic peroxides at the Crosby facility that require refrigerated storage, 2016 Tier II Report, and On-Site Inventories of raw and finished material for August 28-29, 2017 that were submitted with Arkema's initial response on September 18.

The following additional information responsive to Question 3(c) was submitted with the second response:

1. The primary refrigeration system (main power supplied from third party electric company) is used to keep the low temperature Organic Peroxides

(OP) at their designated storage temperature. To keep the OPs at their designated storage temperature, the following engineering and administrative controls are employed:

a. A backup or redundant compressor is provided for each building in case of compressor failure on the refrigeration system.

b. A Temperature Alarm is also installed within each refrigerator building to notify an operator if the temperature inside begins to rise above the set point for the building. An alarm triggers operator response to identify the source of the temperature deviation.

c. In addition to the above, operators make rounds in the storage area every two (2) hours to visually check temperature/status of each refrigerator building.

2. If the primary source of power fails, each Refrigerator building is equipped with a diesel powered backup generator to power the refrigeration system.

3. If the refrigeration system on a single refrigerated building has been compromised (due to loss of primary and backup power), the product for that building can be moved to either a building which still has power or to a Reefer Storage Trailer.

4. A Nitrogen Cooling system is also available to cool a building which has lost power/refrigeration.

Additional information in response to Question 3 is provided with the response to Question 4(b) below.

4. What backup power and safety systems were in place prior to the flooding?

a. What "Recognized And Generally Accepted Good Engineering Practices" are followed by Arkema for the design, installation, operation, maintenance, and reliability of the backup power and safety system?

b. What were the engineering and administrative controls for the safety and power systems, and what were their known consequences of failure, and what additional safety measures were in place in event of such failure?

RESPONSE:

Please refer to the Process Hazard Analysis for Organic Peroxide Storage that was submitted with Arkema's initial response on September 18, and to additional information provided in Arkema's second response on September 22.

The following additional information in response to Question 4(a) is submitted with this third response:

i. NFPA 400: Hazardous Materials Code.
ii. NFPA 70E: National Electric Code.
iii. Storage Building Limits and Safety Guidelines OPRS0552

The following information in response to Question 4(b) is submitted with this third response:

i. The primary refrigeration system (main power supplied from third party electric company) is used to keep the low temperature Organic Peroxides (OPs) at their designated storage temperature. Both loss of power and loss of cooling have the same consequence of failure. As an OP warms up, it has the potential to reach a product-specific Self-Accelerating Decomposition Temperature (SADT) and then decompose. This decomposition can generate a flammable vapor with potential for a fire. To keep the OPs at their designated storage temperature, the following engineering and administrative controls are employed:

    1. A backup or redundant compressor is provided for each building in case of compressor failure on the refrigeration system.

    2. Multiple temperature indicators are available and calibrated quarterly.

    3. A Temperature Alarm is also within each refrigerator building to notify an operator if the temperature inside begins to rise above the set point for the building. Visual and audible alarms trigger operator response to identify the source of the temperature deviation. Alarms also function during power interruption and generator operation.

    4. Automatic temperature controllers are also available.

    5. LEL detectors with alarms are installed to detect decomposition products in each building.

    6. In addition to the above, operators make rounds in the storage area every two (2) hours to visually check temperature/status of each refrigerator building.

ii. If the primary source of power fails, each refrigerated building is equipped with a diesel powered backup generator to power the refrigeration system.

iii. If the refrigeration system on a single refrigerated building has been compromised (due to loss of primary and backup power), the product for that building can be moved to either a building which still has power or to a Reefer Storage Trailer.

iv. A Nitrogen Cooling system is also available to cool a building which has lost power/refrigeration.

5. What measures did Arkema take in response to the flooding to minimize consequences of an accidental release or fire/explosion involving either RMP-regulated substances or other hazardous chemicals held at the site, including organic peroxides?

RESPONSE:

Please refer to the timeline included in the response to Question 1 that was submitted with Arkema's initial response on September 18. The following additional information was submitted with the second response:

Please see the information provided above in response to Question 1 in this second response.

There was no accidental release of any RMP-regulated substance at the site during the flooding incident. Arkema took a number of actions in concert with Unified Command to prevent an accidental release of RMP-regulated substances, and these were successful.

There was an overflow of some hazardous materials from the site's open-topped wastewater storage tanks. The plant personnel took a number of actions prior to and during the storm (prior to power becoming unavailable and the secondary containment becoming overtopped by rising flood water), such as pumping water to the site's UIC system, reducing freeboard within the secondary containment, and the like. Rising flood waters coupled with power being unavailable eventually overcame all efforts to prevent the accidental release of this material. A copy of Arkema's STEERS report on this accidental release was included with the initial response to the Information Request.

The response to Question 4(b) above is also incorporated in this third response in response to this Question 5.

List of Attachments

Temperature Readings from Trailers

Vaughn, Lorena

From: Amandes, Christopher B. <christopher.amandes@morganlewis.com>
Sent: Thursday, October 19, 2017 1:42 PM
To: Murdock, James
Cc: Bernier, Roberto; Stucky, Marie; Thompson, Steve; Sullivan, Greg; Miles, James; Haas, Craig; Quiroz Guadalupe_TCEQ; Jason.Holloman@tceq.texas.gov; derek.mangold@tceq.texas.gov; Craig.Hill@pcs.hctx.net
Subject: Corrected Third Response to EPA September 7 Information Request
Attachments: ARK_EPA_0000797.pdf

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Arkema's Third Response to EPA Information Request Pursuant to the Clean Air Act Section 114(a), for the Arkema Crosby Plant, received Sept. 7, 2017

III. QUESTIONS

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RESPONSE:

Please refer to the preliminary timeline of the event that was submitted with Arkema's initial response on September 18. An Enhanced Timeline was provided with the second response – Hurricane Harvey Event and Materials Provided to EPA and Unified Command.

This third response provides additional information in response to Question 1(f), namely, temperature readings from those trailers from which temperature readings were received. Three trailers were not equipped with remote temperature monitoring equipment.

2. Please provide any documents associated with the identification of hazards posed by organic peroxides at your facility, operating procedures related to organic peroxides, and procedures related to flood, hurricane, loss of power, and emergency operations, and shutdown.

RESPONSE:

Please refer to the Safety Data Sheets for the organic peroxides at the Crosby facility that require refrigerated storage, Emergency Response Plan, Hurricane Preparedness Plan, Risk Management Plan, and Process Hazard Analysis for Organic Peroxide Storage that were submitted with Arkema's initial response on September 18. Submitted with the second response were the Crosby Plant Products Storage Directory, Storage Building Limits and Safety Guidelines procedure, and Nitrogen Transfer Procedure.

No additional information is being submitted with this third response in response to Question 2.

3. What are the names and Chemical Abstract Service (CAS) Numbers of the organic peroxides moved to the refrigerated trailers?

a. How and where are organic peroxides normally stored at the facility?

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e. Are organic peroxides ever moved off site for safe storage? If so, where are they moved, and what conditions trigger such movement?

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The following additional information responsive to Question 3(c) was submitted with the second response:

1. The primary refrigeration system (main power supplied from third party electric company) is used to keep the low temperature Organic Peroxides

(OP) at their designated storage temperature. To keep the OPs at their designated storage temperature, the following engineering and administrative controls are employed:

a. A backup or redundant compressor is provided for each building in case of compressor failure on the refrigeration system.

b. A Temperature Alarm is also installed within each refrigerator building to notify an operator if the temperature inside begins to rise above the set point for the building. An alarm triggers operator response to identify the source of the temperature deviation.

c. In addition to the above, operators make rounds in the storage area every two (2) hours to visually check temperature/status of each refrigerator building.

2. If the primary source of power fails, each Refrigerator building is equipped with a diesel powered backup generator to power the refrigeration system.

3. If the refrigeration system on a single refrigerated building has been compromised (due to loss of primary and backup power), the product for that building can be moved to either a building which still has power or to a Reefer Storage Trailer.

4. A Nitrogen Cooling system is also available to cool a building which has lost power/refrigeration.

Additional information in response to Question 3 is provided with the response to Question 4(b) below.

4. What backup power and safety systems were in place prior to the flooding?

a. What "Recognized And Generally Accepted Good Engineering Practices" are followed by Arkema for the design, installation, operation, maintenance, and reliability of the backup power and safety system?

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4. Automatic temperature controllers are also available.

5. LEL detectors with alarms are installed to detect decomposition products in each building.

6. In addition to the above, operators make rounds in the storage area every two (2) hours to visually check temperature/status of each refrigerator building.

ii. If the primary source of power fails, each refrigerated building is equipped with a diesel powered backup generator to power the refrigeration system.

iii. If the refrigeration system on a single refrigerated building has been compromised (due to loss of primary and backup power), the product for that building can be moved to either a building which still has power or to a Reefer Storage Trailer.

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5. What measures did Arkema take in response to the flooding to minimize consequences of an accidental release or fire/explosion involving either RMP-regulated substances or other hazardous chemicals held at the site, including organic peroxides?

RESPONSE:

Please refer to the timeline included in the response to Question 1 that was submitted with Arkema's initial response on September 18. The following additional information was submitted with the second response:

Please see the information provided above in response to Question 1 in this second response.

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There was an overflow of some hazardous materials from the site's open-topped wastewater storage tanks. The plant personnel took a number of actions prior to and during the storm (prior to power becoming unavailable and the secondary containment becoming overtopped by rising flood water), such as pumping water to the site's UIC system, reducing freeboard within the secondary containment, and the like. Rising flood waters coupled with power being unavailable eventually overcame all efforts to prevent the accidental release of this material. A copy of Arkema's STEERS report on this accidental release was included with the initial response to the Information Request.

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Third Response to EPA Information Request Pursuant to the Clean Air Act Section 114(a), for the Arkema Crosby Plant, received Sept. 7, 2017

List of Attachments

Temperature Readings from Trailers

Vaughn, Lorena

From: Murdock, James
Sent: Thursday, October 19, 2017 11:06 AM
To: Amandes, Christopher B.
Subject: RE: Arkema Information

My office phone, (214)665-7302, will forward.

From: Amandes, Christopher B. [mailto:christopher.amandes@morganlewis.com]
Sent: Thursday, October 19, 2017 10:52 AM
To: Murdock, James <Murdock.James@epa.gov>
Subject: RE: Arkema Information

Sure. What number should I call?

Chris
Christopher B. Amandes
Morgan, Lewis & Bockius LLP
1000 Louisiana Street, Suite 4000 | Houston, TX 77002
Direct: +1.713.890.5735 | Mobile: +1.832.646.3702 | Fax: +1.713.890.5001
christopher.amandes@morganlewis.com | www.morganlewis.com
Assistant: Renetta Parham | +1.713.890.5740 | renetta.parham@morganlewis.com

From: Murdock, James [mailto:Murdock.James@epa.gov]
Sent: Thursday, October 19, 2017 10:51 AM
To: Amandes, Christopher B.
Subject: RE: Arkema Information

Could we push it back to 2:00 CST? I have a conference call at 1:00 that may go long.

From: Amandes, Christopher B. [mailto:christopher.amandes@morganlewis.com]
Sent: Thursday, October 19, 2017 9:42 AM
To: Murdock, James <Murdock.James@epa.gov>
Subject: RE: Arkema Information

Thanks, I understand now. I will get that fixed and get the complete document sent to you and your colleagues and the other agencies.

I am in Arizona for my annual law firm partners meeting and having to go in and out of meetings all day. Could I call you at 1.30 pm your time?

Chris
Christopher B. Amandes
Morgan, Lewis & Bockius LLP
1000 Louisiana Street, Suite 4000 | Houston, TX 77002
Direct: +1.713.890.5735 | Mobile: +1.832.646.3702 | Fax: +1.713.890.5001
christopher.amandes@morganlewis.com | www.morganlewis.com
Assistant: Renetta Parham | +1.713.890.5740 | renetta.parham@morganlewis.com

From: Murdock, James [mailto:Murdock.James@epa.gov]
Sent: Thursday, October 19, 2017 9:29 AM
To: Amandes, Christopher B.
Subject: RE: Arkema Information

Chris,

I'm off today with sick kids but can try and give you a call this afternoon. I just got a busy signal on your direct line.

To clarify: Your document is not missing a bates numbered page; the original document (Arkema's Third Response) was not scanned correctly and what should be page 3 of the document was never entered.
If you'll look at the end of ARK_EPA_0000787 to the top of ARK_EPA_0000788, you'll see that 787 is p. 2 of the document and ends in the middle of a sentence about Question 3. 788 then begins with a new sentence about Question 4:

1. The primary refrigeration system (main power supplied from third party electric company) is used to keep the low temperature Organic Peroxides

DB1/ 93916031.1 2

ARK_EPA_0000787

The following additional information in response to Question 4(a) is submitted with this third response:

Additionally, 787 is p. 2 of the Third Response and 788 is p. 4 of that document:

DB1/ 93916031.1 4

ARK_EPA_0000788

Please supply the missing page three of Arkema's Third Response.

Thanks,

James

From: Amandes, Christopher B. [mailto:christopher.amandes@morganlewis.com]
Sent: Thursday, October 19, 2017 8:46 AM

To: Murdock, James <Murdock.James@epa.gov>
Subject: RE: Arkema Information

Here's the entire document. All of the pages look good as I send them, but let me know if there is still a problem.

Will you be in the office this afternoon? I'd like to give you a call.

Chris

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From: Murdock, James [mailto:Murdock.James@epa.gov]
Sent: Thursday, October 19, 2017 7:58 AM
To: Amandes, Christopher B.
Subject: RE: Arkema Information

Yes, that would have been the next stamp in sequence.

From: Amandes, Christopher B. [mailto:christopher.amandes@morganlewis.com]
Sent: Wednesday, October 18, 2017 5:41 PM
To: Murdock, James <Murdock.James@epa.gov>
Subject: RE: Arkema Information

James,

I want to make sure I send you the right document. Is the page you are referring to one that would have an ARK_EPA_0000788 Bates stamp?

Chris

Christopher B. Amandes
Morgan, Lewis & Bockius LLP
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From: Murdock, James [mailto:Murdock.James@epa.gov]
Sent: Wednesday, October 18, 2017 3:17 PM
To: Amandes, Christopher B.
Subject: Arkema Information

Chris,

Thank you for providing us with additional information. It looks like page 3 of Arkema's Third Response did not scan; could you send that to me?

Thanks,

James Murdock

Assistant Regional Counsel
RCRA & Toxics Enforcement Branch
U.S. Environmental Protection Agency, Region 6
1445 Ross Avenue, Suite 1200 (6RC-ER)
Dallas, Texas 75202
Tel. (214) 665-7302
Fax (214) 665-3177
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Vaughn, Lorena

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I am in Arizona for my annual law firm partners meeting and having to go in and out of meetings all day. Could I call you at 1.30 pm your time?

Chris
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Subject: RE: Arkema Information

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Assistant: Renetta Parham | +1.713.890.5740 | renetta.parham@morganlewis.com

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Vaughn, Lorena

From: Murdock, James
Sent: Thursday, October 19, 2017 10:51 AM
To: Amandes, Christopher B.
Subject: RE: Arkema Information

Could we push it back to 2:00 CST? I have a conference call at 1:00 that may go long.

From: Amandes, Christopher B. [mailto:christopher.amandes@morganlewis.com]
Sent: Thursday, October 19, 2017 9:42 AM
To: Murdock, James <Murdock.James@epa.gov>
Subject: RE: Arkema Information

Thanks, I understand now. I will get that fixed and get the complete document sent to you and your colleagues and the other agencies.

I am in Arizona for my annual law firm partners meeting and having to go in and out of meetings all day. Could I call you at 1.30 pm your time?

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CB1/ 93916031.1 2

ARK_EPA_0000787

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CB1/ 93916031.1 4

ARK_EPA_0000788

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OB1/ 93916031.1 2

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DB1/ 93916031.1 4

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Attachments: ARK_EPA_0000783.pdf

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Morgan Lewis

Christopher B. Amandes
Partner
+1.713.890.5735
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October 6, 2017

By email murdock.james@epa.gov and US mail

Mr. Samuel Tates, Chief
Chemical Accident Enforcement Section (6EN-AS)
Air Enforcement Branch
Compliance Assurance and Enforcement Division
United States Environmental Protection Agency Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

RE: Arkema Inc. Crosby, Texas Facility
Third Response to EPA Information Request Pursuant to the Clean Air Act Section 114

CONFIDENTIAL BUSINESS INFORMATION ENCLOSED

Dear Mr. Tates:

On behalf of the Arkema Inc. Crosby, Texas facility (Arkema), we are hereby submitting this third response to the United States Environmental Protection Agency (EPA) request to provide information pursuant to the Clean Air Act Section 114(a) (Information Request) that was received on September 7, 2017. The Information Request directed Arkema to provide the requested information within 10 days of receipt, and with your consent, Arkema submitted its initial response to the request on September 18, which was the next working day after the 10 day deadline.

Four days earlier, on September 14, 2017, Arkema requested an extension until December 8, 2017, to respond completely to the Information Request. On September 18, you sent me an email denying Arkema's request with respect to the following items, and you directed Arkema to respond to these questions no later than September 22, 2017:

- Question #1 with the exception of paragraph f;

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Houston, TX 77002
United States

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F +1.713.890.5001

- Question #2 regarding operating procedures related to storage of organic peroxides; and

- Question #3, sub questions a., b., and c.

Arkema submitted its second response on September 22 as a result of your denial of Arkema's request for an extension as to these items. The second response included information to respond to the above-listed questions and supplemented the first response.

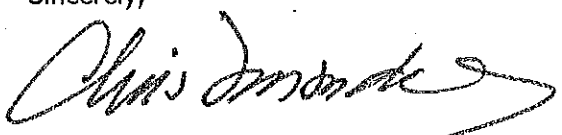
Arkema now submits its third response to the Information Request. Arkema also acknowledges that on September 29, Cheryl Seager of EPA asked for clarification of and elaboration on a number of items and provided Arkema until October 17 to respond to the remainder of the information request. Arkema will respond to the requests for clarification and elaboration in a subsequent response.

Arkema has responded in good faith to provide the information currently available to it, and it has made diligent efforts to ensure that this information is accurate. Arkema's investigation of the incident is ongoing, as are investigations by the Chemical Safety Board and others, and Arkema acknowledges its obligation to submit new or corrected information as it becomes available.

This response is submitted subject to all of the objections and qualifications set out in our initial response transmittal letter of September 18.

If you have any questions concerning this response, please do not hesitate to contact me.

Sincerely,



Christopher B. Amandes
Counsel to Arkema

cc: all with attachments

DB1/ 93916031.1

Mr. Roberto Bernier, EPA Region 6
United States Environmental Protection Agency Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

Mr. Ramiro Garcia, Jr., Deputy Director
Office of Compliance and Enforcement – MC-172
Texas Commission on Environmental Quality
P. O. Box 13087
Austin, Texas 78711-3087

Ms. Guadalupe Quiroz
TCEQ Region 12
5425 Polk Avenue, Suite H
Houston, Texas 77023

Mr. Craig Hill
Harris County Pollution Control Services Department
101 South Richey, Suite H
Pasadena, Texas 77506

Arkema's Third Response to EPA Information Request Pursuant to the Clean Air Act Section 114(a), for the Arkema Crosby Plant, received Sept. 7, 2017

III. QUESTIONS

1. Please provide a detailed description and timeline of the event. Include the best known start time and duration of the incident. The timeline should address in detail the following events as well as any other relevant points:

   a. Primary power failure.

   b. Use of backup power supply and subsequent failure.

   c. Use of liquid nitrogen and related equipment and subsequent failure.

   d. Removal of organic peroxides material to each of the nine refrigerated trailers, and which specific organic peroxides materials were placed in each trailer.

   e. Relocation of each of the nine refrigerated trailers.

   f. Temperature readings on each of the nine trailers.

   g. Failure of primary and backup refrigeration systems in trailers.

   h. Initial ignition and combustion of materials in each of the nine trailers.

   i. Controlled burn of each trailers.

   j. Other emergency response activities.

RESPONSE:

Please refer to the preliminary timeline of the event that was submitted with Arkema's initial response on September 18. An Enhanced Timeline was provided with the second response – Hurricane Harvey Event and Materials Provided to EPA and Unified Command.

This third response provides additional information in response to Question 1(f), namely, temperature readings from those trailers from which temperature readings were received. Three trailers were not equipped with remote temperature monitoring equipment.

2. Please provide any documents associated with the identification of hazards posed by organic peroxides at your facility, operating procedures related to organic peroxides, and procedures related to flood, hurricane, loss of power, and emergency operations, and shutdown.

RESPONSE:

Please refer to the Safety Data Sheets for the organic peroxides at the Crosby facility that require refrigerated storage, Emergency Response Plan, Hurricane Preparedness Plan, Risk Management Plan, and Process Hazard Analysis for Organic Peroxide Storage that were submitted with Arkema's initial response on September 18. Submitted with the second response were the Crosby Plant Products Storage Directory, Storage Building Limits and Safety Guidelines procedure, and Nitrogen Transfer Procedure.

No additional information is being submitted with this third response in response to Question 2.

3. What are the names and Chemical Abstract Service (CAS) Numbers of the organic peroxides moved to the refrigerated trailers?

a. How and where are organic peroxides normally stored at the facility?

b. How much organic peroxides are stored at the facility at any one time?

c. What layers of protection or other release prevention measures are in place for the storage of organic peroxides on site?

d. Under what conditions are organic peroxides moved to refrigerated trailers? Prior to the incident, when and for how long did you store materials, including organic peroxides, in refrigerated trailers?

e. Are organic peroxides ever moved off site for safe storage? If so, where are they moved, and what conditions trigger such movement?

RESPONSE:

Please refer to the Safety Data Sheets for the organic peroxides at the Crosby facility that require refrigerated storage, 2016 Tier II Report, and On-Site Inventories of raw and finished material for August 28-29, 2017 that were submitted with Arkema's initial response on September 18.

The following additional information responsive to Question 3(c) was submitted with the second response:

1. The primary refrigeration system (main power supplied from third party electric company) is used to keep the low temperature Organic Peroxides

The following additional information in response to Question 4(a) is submitted with this third response:

i. NFPA 400: Hazardous Materials Code.
ii. NFPA 70E: National Electric Code.
iii. Storage Building Limits and Safety Guidelines OPRS0552

The following information in response to Question 4(b) is submitted with this third response:

i. The primary refrigeration system (main power supplied from third party electric company) is used to keep the low temperature Organic Peroxides (OPs) at their designated storage temperature. Both loss of power and loss of cooling have the same consequence of failure. As an OP warms up, it has the potential to reach a product-specific Self-Accelerating Decomposition Temperature (SADT) and then decompose. This decomposition can generate a flammable vapor with potential for a fire. To keep the OPs at their designated storage temperature, the following engineering and administrative controls are employed:

    1. A backup or redundant compressor is provided for each building in case of compressor failure on the refrigeration system.

    2. Multiple temperature indicators are available and calibrated quarterly.

    3. A Temperature Alarm is also within each refrigerator building to notify an operator if the temperature inside begins to rise above the set point for the building. Visual and audible alarms trigger operator response to identify the source of the temperature deviation. Alarms also function during power interruption and generator operation.

    4. Automatic temperature controllers are also available.

    5. LEL detectors with alarms are installed to detect decomposition products in each building.

    6. In addition to the above, operators make rounds in the storage area every two (2) hours to visually check temperature/status of each refrigerator building.

ii. If the primary source of power fails, each refrigerated building is equipped with a diesel powered backup generator to power the refrigeration system.

iii. If the refrigeration system on a single refrigerated building has been compromised (due to loss of primary and backup power), the product for that building can be moved to either a building which still has power or to a Reefer Storage Trailer.

iv. A Nitrogen Cooling system is also available to cool a building which has lost power/refrigeration.

5. What measures did Arkema take in response to the flooding to minimize consequences of an accidental release or fire/explosion involving either RMP-regulated substances or other hazardous chemicals held at the site, including organic peroxides?

RESPONSE:

Please refer to the timeline included in the response to Question 1 that was submitted with Arkema's initial response on September 18. The following additional information was submitted with the second response:

Please see the information provided above in response to Question 1 in this second response.

There was no accidental release of any RMP-regulated substance at the site during the flooding incident. Arkema took a number of actions in concert with Unified Command to prevent an accidental release of RMP-regulated substances, and these were successful.

There was an overflow of some hazardous materials from the site's open-topped wastewater storage tanks. The plant personnel took a number of actions prior to and during the storm (prior to power becoming unavailable and the secondary containment becoming overtopped by rising flood water), such as pumping water to the site's UIC system, reducing freeboard within the secondary containment, and the like. Rising flood waters coupled with power being unavailable eventually overcame all efforts to prevent the accidental release of this material. A copy of Arkema's STEERS report on this accidental release was included with the initial response to the Information Request.

The response to Question 4(b) above is also incorporated in this third response in response to this Question 5.

List of Attachments

Temperature Readings from Trailers

Vaughn, Lorena

From: Murdock, James
Sent: Thursday, October 19, 2017 7:58 AM
To: Amandes, Christopher B.
Subject: RE: Arkema Information

Yes, that would have been the next stamp in sequence.

From: Amandes, Christopher B. [mailto:christopher.amandes@morganlewis.com]
Sent: Wednesday, October 18, 2017 5:41 PM
To: Murdock, James <Murdock.James@epa.gov>
Subject: RE: Arkema Information

James,

I want to make sure I send you the right document. Is the page you are referring to one that would have an ARK_EPA_0000788 Bates stamp?

Chris

Christopher B. Amandes
Morgan, Lewis & Bockius LLP
1000 Louisiana Street, Suite 4000 | Houston, TX 77002
Direct: +1.713.890.5735 | Mobile: +1.832.646.3702 | Fax: +1.713.890.5001
christopher.amandes@morganlewis.com | www.morganlewis.com
Assistant: Renetta Parham | +1.713.890.5740 | renetta.parham@morganlewis.com

From: Murdock, James [mailto:Murdock.James@epa.gov]
Sent: Wednesday, October 18, 2017 3:17 PM
To: Amandes, Christopher B.
Subject: Arkema Information

Chris,

Thank you for providing us with additional information. It looks like page 3 of Arkema's Third Response did not scan; could you send that to me?

Thanks,

James Murdock
Assistant Regional Counsel
RCRA & Toxics Enforcement Branch
U.S. Environmental Protection Agency, Region 6
1445 Ross Avenue, Suite 1200 (6RC-ER)
Dallas, Texas 75202
Tel. (214) 665-7302
Fax (214) 665-3177
murdock.james@epa.gov

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Vaughn, Lorena

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christopher.amandes@morganlewis.com | www.morganlewis.com
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Vaughn, Lorena

From: Amandes, Christopher B. <christopher.amandes@morganlewis.com>
Sent: Wednesday, October 18, 2017 6:24 PM
To: Murdock, James
Cc: Bernier, Roberto; Stucky, Marie; Thompson, Steve; Sullivan, Greg; Miles, James; Haas, Craig; Quiroz Guadalupe_TCEQ; Jason.Holloman@tceq.texas.gov; derek.mangold@tceq.texas.gov; Craig.Hill@pcs.hctx.net
Subject: Arkema Crosby Facility - Fourth Response to EPA Sept. 7 Information Request
Attachments: Transmittal letter.pdf; Fourth Response to Sept. 7 Information Request.pdf

Mr. Murdock,

Attached is the fourth response to the September 7 Information Request submitted to Arkema Inc. regarding the Arkema Crosby facility. Because this is a short response, I am sending this directly instead of via the external sharefile site we have used previously. This response does not contain any Arkema confidential business information.

This response addresses the requests for clarification of and elaboration on a number of items that Cheryl Seager posed in her September 29, 2017 letter to JeanMarie Cencetti of Arkema. With this submission, Arkema believes that it has now responded completely to all of the questions in the September 7 Information Request.

Please let me know if you have any questions.

Chris

Christopher B. Amandes
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Morgan Lewis

Christopher B. Amandes
Partner
+1.713.890.5735
christopher.amandes@morganlewis.com

October 18, 2017

By email murdock.james@epa.gov and US mail

Ms. Cheryl T. Seager, Director
Compliance Assurance and Enforcement Division
United States Environmental Protection Agency Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

RE: Arkema Inc. Crosby, Texas Facility
Fourth Response to EPA Information Request Pursuant to the Clean Air Act Section 114

Dear Ms. Seager:

On behalf of the Arkema Inc. Crosby, Texas facility (Arkema), we are hereby submitting this fourth response to the United States Environmental Protection Agency (EPA) request to provide information pursuant to the Clean Air Act Section 114(a) (Information Request) that was received on September 7, 2017. Specifically, Arkema is responding to your request for clarification of and elaboration on a number of items in your letter to JeanMarie Cencetti of Arkema dated September 29, 2017. Arkema believes that with this response, it has now responded completely to all of the questions in the September 7 Information Request.

Arkema has responded in good faith to provide the information currently available to it, and it has made diligent efforts to ensure that this information is accurate. Arkema's investigation of the incident is ongoing, as are investigations by the Chemical Safety Board and others, and Arkema acknowledges its obligation to submit new or corrected information as it becomes available.

This response is submitted subject to all of the objections and qualifications set out in our initial response transmittal letter of September 18.

Morgan, Lewis & Bockius LLP

1000 Louisiana Street
Suite 4000
Houston, TX 77002
United States

T +1.713.890.5000
F +1.713.890.5001

If you have any questions concerning this response, please contact me.

Sincerely,

Christopher B. Amandes
Counsel to Arkema

cc: all with attachments

Mr. Roberto Bernier, EPA Region 6
United States Environmental Protection Agency Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

Mr. Ramiro Garcia, Jr., Deputy Director
Office of Compliance and Enforcement – MC-172
Texas Commission on Environmental Quality
P. O. Box 13087
Austin, Texas 78711-3087

Ms. Guadalupe Quiroz
TCEQ Region 12
5425 Polk Avenue, Suite H
Houston, Texas 77023

Mr. Craig Hill
Harris County Pollution Control Services Department
101 South Richey, Suite H
Pasadena, Texas 77506

Arkema's Fourth Response to EPA Information Request Pursuant to the Clean Air Act Section 114(a), for the Arkema Crosby Plant, received Sept. 7, 2017

QUESTION 1

The following composite information-timeline is Arkema's best effort to provide the EPA with as complete an answer as possible. This composite information/timeline is built upon the recollections of ride-out crew members, ride-out logs taken contemporaneously (previously provided to the EPA), and interviews with a number of people. Despite our extensive investigatory efforts to date, further details may emerge providing new and/or differing accounts than those recounted below. Arkema reserves the right to promptly supplement and/or amend the composite information-timeline below as new and/or differing details come to light.

b. Please provide information detailing: the individual equipment used to provide backup power, which pieces of equipment provided power to which buildings, when each source of backup power was used, and how and when each source of backup power failed

RESPONSE:

Diesel generators provide backup power to the storage buildings at the Crosby Facility. The list of buildings controlled by generators is as follows:

- Generator 21-GN1
  - Supplies backup power to buildings 8, 9, 13, 27, and bays 1-3 in Building 21;
- Generator 4-GN2
  - Supplies backup power to buildings 2, 3, 40, 26, the water tower, fire water tank, and diesel fuel pumps;
- Generator 43-GN1
  - Supplies backup power to bays 4-5 in building 21, the thermal oxidizer, and the scrubber;
- Generator 4-GN1
  - Supplies backup power to building 4, the nitrogen generator, and the main air compressor;
- Generator 32-GN1
  - Supplies backup power for the MPU;
- Generator 14-GN1
  - Supplies backup power for the wastewater treatment plant;

The cold storage buildings at the Crosby Facility are listed as follows: Building 2, Building 3, Building 8, Building 9, Building 13, Building 27, and Building 40.

Due to the unprecedented rain and floodwaters at the Crosby facility, the plant's ride-out crew proactively cut power to several buildings prior to the loss of main power and backup power sources. This decision was made due to the floodwater levels rising high enough to potentially reach the main power transformers for the buildings, posing a risk of electrocution to the ride-out crew. The order of those buildings being shut down prior to loss of main power is as follows:

- Building 3's power was cut locally on Sunday morning, August 27;
- Building 8 and Building 9 had their power cut about an hour after Building 3;

- Building 4 and Building 10 had their power cut next;
- Building 13 and Building 2 were both cut after that;
- Building 5 was shut down almost immediately following Building 2 and Building 13;
- Building 40 was shut down several hours after Building 5 which was late on Sunday evening, August 27; and
- Around 11:00 PM on Sunday August 27, power was cut to motor control center 39, which supplied power to the wastewater treatment plant.

Because the transformers to these buildings were proactively cut, their generators never started. At approximately 1:30-2:00 AM on the morning of Monday, August 28, 2017, the main CenterPoint power transformer blew due to rising floodwaters. After the loss of main power, Generators 21-GN1 and 43-GN1 started automatically, and were supplying power to Building 21 and Building 27. Generator 32-GN1, which feeds the MPU, began arcing as it was trying to power on and was proactively shut off. As water continued rising on early Monday morning, it began jeopardizing Generators 21-GN1 and 43-GN1. They were shut down at approximately 5:00 AM Monday, August 28 to prevent an unsafe electrical hazard.

c. Please provide information detailing the best known time and duration for any liquid nitrogen activities

RESPONSE:

The liquid nitrogen system (N2) was never utilized during the event due to the rising floodwaters making the N2 system unavailable and impossible to use. On Sunday, August 27, Dennis Avant, a production supervisor, placed an elbow joint and extension pipe—estimated to be 8-10 inches long—on the N2 system headers in an effort to keep them above the rising floodwaters and preserve the N2 system as a last-resort back-up. By daylight on Monday morning, August 28, the extension pipe was underwater. No other N2 system activities occurred during the event and the N2 system was never activated.

d. Please provide information detailing the times and dates Arkema loaded material onto each trailer, information regarding what specific material was placed in specific trailers, and how Arkema transported the material to the trailers from the buildings.

RESPONSE:

The ride-out crew began loading products from cold storage buildings to other cold storage buildings and refrigerated trailers sometime before 7:30 a.m. on Sunday, August 27, 2017. The first product moved was the LUPEROX 546 stored in Building 3. Around 7:30 a.m., the LUPEROX 221 stored in Building 9 was moved. By roughly 7:00 PM on Sunday, August 27, the ride-out crew had emptied all of the products stored in Buildings 2, 3, 8, 9, 13, and 40 into refrigerated trailers or into Building 27, which still had power and cooling. All of the products were moved on Sunday, August 27 by yard mules and forklifts.

On Monday morning, around roughly 2:00 AM, the ride-out crew made the decision to move the product out of Building 27 and into the remaining refrigerated trailers because the primary power had been lost due to extensive flooding, and Building 27 was operating on generator power. However, due to rising floodwaters approaching the backup generators, the ride-out crew decided that, Building 27 would have to be shut down and the product inside Building 27 would have to be moved into refrigerated trailers. Around 3:00-5:00 AM on Monday, August 28, the ride-out crew

began moving product from Building 27 into the two refrigerated trailers parked in front of Building 27. The first product moved out of Building 27 was LUPEROX 221. By approximately 8am, the ride-out crew had filled the two trailers in front of Building 27. However, they still had roughly 48 pallets, each weighing 1,575 pounds, of product left in Building 27.[1] By this time, the floodwaters had risen to where it had flooded the yard mules and forklifts they had previously used to move the pallets. Thus, the only option remaining was to breakdown the packaging on each pallet, and begin hand-stacking/loading the product into the trailers. In order to do this, the ride-out crew took the pallets one-by-one from Building 27, using the large forklift (also referred to as the Lull), to Building 21 where they could then break them down and load the product individually by hand into the trailer at Building 21. This process lasted all day and ended roughly between the hours of 10:00 pm to midnight on Monday, August 28.

Other than the information outlined above, Arkema is still determining specifically what products were loaded into which trailers. The information on all of the cold storage products that were in the various trailers can be found in the Safety Data Sheets previously provided.

e. It is unclear from Arkema's response if the refrigerated trailers were moved throughout the event. Please provide a specific response.

RESPONSE:

Several trailers were moved during the event. Arkema's current understanding is that trailers were moved as follows:

- After loading trailers with all of the cold storage material from Building 2 on Sunday morning, August 27, the ride-out crew moved the trailers to the landing yard just North West of the MPU unit;
- By 7 p.m. Sunday, August 27, the trailers from Building 40 were moved to the landing yard after having been loaded with product; and
- By Monday morning, August 28, a total of five (5) trailers had been moved to the landing yard. During the early afternoon on Monday, another trailer by Building 21 was moved over to the landing yard and was the last trailer able to be moved due to the floodwaters.

The last trailer moved to the landing yard coincided with all of the yard mules having been flooded, making it impossible to move any more trailers from their locations.

g. Please provide a detailed timeline and analysis of why the refrigeration systems in each alternative storage trailer failed.

RESPONSE:

It is currently unknown exactly why the refrigeration systems in the refrigerated trailers failed. Forensic analyses of these trailers will need to be conducted to establish the cause of such failures. The temperature data provided in response to subpart (f) of this question establishes the best known timeline of when specific trailer refrigeration systems failed. Failure information or timelines for the trailers that did not have temperature data are currently unknown.

[1] Each pallet held 45 individual containers of product, each weighing 35 pounds. All 2,160 of these 35 pound containers were hand stacked into the remaining trailer in front of Building 21.

Eyewitness accounts from the ride-out crew stated that one of the two trailers by Building 27 failed around 6:00-7:00 PM on Monday, August 28, 2017. Attempts to restart that trailer were unsuccessful. By roughly 10:00 PM or midnight on Monday, the other trailer by Building 27 had also failed. Attempts to restart that trailer were likewise unsuccessful.

h. Initial ignition and combustion of materials in each of the nine trailers
i. Controlled burn of each trailer

Please provide a detailed accounting of where, when, and why each individual trailer burned

RESPONSE:

Most of this information can be found in the timeline previously provided to EPA.

There were three (3) separate burn events for trailers at the Crosby plant: (1) one trailer next to Building 21 ignited and burned beginning at approximately 2:00 - 2:30 AM CDT on Thursday, August 31, 2017; (2) two trailers next to Building 27 ignited and burned beginning at approximately 5:00 PM CDT on Friday, September 1, 2017; and (3) six trailers located at the North-East part of the Crosby plant and slightly North-West of the MPU unit were ignited remotely by the Unified Command and burned at approximately 3:45 PM CDT on Sunday, September 3, 2017.

Regarding the request as to why the individual trailers burned, Arkema's current understanding is as follows:

- The first three trailers (one at Building 21 and two at Building 27) burned as a result of some or all of the organic peroxide materials warming past their decomposition temperature and self-igniting; and
- The last six trailers burned as a result of the Unified Command entering the facility and placing ignition charges on each of the six separate trailers. Following this, the Unified Command remotely ignited the remaining trailers in the following order (trailers identified in order location West to East)—3, 4, 1, 2, 5, 6.

QUESTION 2

Please provide the management of change or procedures for emergency transfer of organic peroxide materials for storage on refrigerated trailers.

RESPONSE:

These procedures are addressed in Arkema's 'Storage Building Limits and Safety Guidelines' operating procedure that was produced to EPA on September 22. No management of change evaluation was necessary during the incident because the emergency use of refrigerated trailers for storage of organic peroxides was already included in the operating procedure.

Vaughn, Lorena

From: Amandes, Christopher B. <christopher.amandes@morganlewis.com>
Sent: Wednesday, October 18, 2017 5:41 PM
To: Murdock, James
Subject: RE: Arkema Information

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Assistant: Renetta Parham | +1.713.890.5740 | renetta.parham@morganlewis.com

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Subject: Arkema Information

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murdock.james@epa.gov

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Fax (214) 665-3177
murdock.james@epa.gov

Vaughn, Lorena

From:	Thompson, Steve
Sent:	Tuesday, October 17, 2017 3:17 PM
To:	Stucky, Marie; Murdock, James
Cc:	Tates, Samuel
Subject:	Fwd: Notice of Intent to File Citizen Suit re Arkema (CWA, RCRA, CERCLA)
Attachments:	NOI Arkema.pdf; ATT00001.htm

FYI

Sent from my iPhone

Begin forwarded message:

> **From:** "Welton, Patricia" <Welton.Patricia@epa.gov>
> **Date:** October 17, 2017 at 2:05:27 PM MDT
> **To:** "Seager, Cheryl" <Seager.Cheryl@epa.gov>, "Edlund, Carl" <Edlund.Carl@epa.gov>, "Coleman, Sam" <Coleman.Sam@epa.gov>, "McDonald, James" <McDonald.James@epa.gov>, "Kelley, Rosemarie" <Kelley.Rosemarie@epa.gov>
> **Cc:** "Phillips, Pam" <phillips.pam@epa.gov>, "Peycke, Mark" <Peycke.Mark@epa.gov>, "McDonald, Scott" <mcdonald.scott@epa.gov>, "Barra, Michael" <barra.michael@epa.gov>, "Quinones, Edwin" <quinones.edwin@epa.gov>, "Smith, Suzanne" <Smith.Suzanne@epa.gov>, "Stenger, Wren" <stenger.wren@epa.gov>, "Fogarty, Johnpc" <Fogarty.Johnpc@epa.gov>, "Saunders, Jerry" <Saunders.Jerry@epa.gov>, "Potts, Mark" <Potts.Mark@epa.gov>, "Thompson, Steve" <thompson.steve@epa.gov>, "Payne, James" <payne.james@epa.gov>
> **Subject: Notice of Intent to File Citizen Suit re Arkema (CWA, RCRA, CERCLA)**
>
> I am attaching a scanned copy of the NOI regarding releases between August 29, 2017 and September 3, 2017 from the Arkema Crosby Plant for your information and review.
> Violations in the NOI include 505(a)(a)(A) of the CWA failing to comply with terms of TPDES Permit; 301 of CWA unpermitted discharge; 7002 RCRA violation of standards and permits, and disposal presents and imminent and substantial endangerment to health and the environment; 107(a) of CERCLA release of hazardous substances response cost, damages to natural resources, and cost of assessments/studies.
> Conclusions noted by counsel for the citizens include need for remediation, changes in Arkema's operation, and a medical monitoring program.
> This 60 day notice is dated October 2, 2017.
>
> -----Original Message-----
> From: 13_I04_Ricoh@epa.gov [mailto:13_I04_Ricoh@epa.gov]
> Sent: Tuesday, October 17, 2017 2:37 PM
> To: Welton, Patricia <Welton.Patricia@epa.gov>
> Subject: Message from "RNP002673A3A1CB"
>
> This E-mail was sent from "RNP002673A3A1CB" (MP C3003).
>
> Scan Date: 10.17.2017 14:36:30 (-0500)
> Queries to: 13_I04_Ricoh@epa.gov

UNDERWOOD
LAW OFFICE
We'll get your life back.

923 Third Avenue
Huntington, WV 25701
phone. 304.522.0508
fax. 972.292.7828

2530 W. White Avenue, Suite 200
McKinney, TX 75071
phone. 972.535.6377
fax. 972.292.7828

October 2, 2017

Via U.S.P.S. Certified Mail – Return Receipt Requested

Mr. Richard Rowe, CEO
Arkema, Inc.
900 First Avenue
King of Prussia, PA 19406

Corporation Service Company
Registered Agent for Arkema, Inc.
211 E. 7th St., Suite 620
Austin TX 78701-3218

Mr. Scott Pruitt, Esq.
Office of the Administrator - 1101A
Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Mr. Samuel Coleman, P.E.
Environmental Protection Agency, Region 6
Fountain Place 12th Floor, Suite 1200
1445 Ross Avenue
Dallas, TX 75202-2733

Attorney General Jeff Sessions
United States Department of Justice
Tenth and Pennsylvania, Avenues, NW
Washington DC 20530

Dr. Bryan W. Shaw, Ph.D., P.E. MC100
Chairman of Texas Commission on Environmental Quality
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3087

Richard A. Hyde, P.E. MC109
Executive Director of Texas Commission on Environmental Quality
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3087

Ms. L'Oreal W. Stepney, P.E MC 158
Deputy Director of Office of Water,
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3087

Mr. Brent Wade, MC123
Deputy Director of Office of Waste
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3087

Attorney General Ken Paxton
Office of the Attorney General
P.O. Box 12548
Austin, TX 78711-2548

Dr. Ileana Arias, Ph.D., Director
Agency for Toxic Substances and Disease Registry,
Center for Disease Control
200 Independence Avenue, SW.,
Washington, DC 20201

Re: ***Notice of Intent to File Citizen Suit Under:***
Water Pollution Control Act ("Clean Water Act")
Resource Conservation and Recovery Act ("RCRA")
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

To Whom It May Concern:

Shannan Wheeler, Kelly and David Phelps, Corey Prantil, Keith Lyons, Bevely Flannel, Ezequiel Villareal, Sandy Gonzalez, Ricardo Gonzalez, Crystal Ivey, Phyllis Simmons, Brett Simmons, Greg Nason, Larry Anderson, Tanya Anderson, Betty Whatley and Ronald Whatley (hereinafter referred to as "The Citizens") are all Texas citizens affected by toxic releases between August 29, 2017 and September 3, 2017 from the Arkema Crosby Plant located at 18000 Crosby Eastgate Rd. in Crosby, Texas.

The aforementioned Texas citizens through undersigned counsel, Mark Underwood, Esq. do hereby provide to Arkema, Inc. and the above-listed government agencies a Notice Of Intent To File Citizen's Suit under the Clean Water Act, RCRA and CERCLA. *See attached hereto as Exhibit 1- Address List of the Citizens Providing Notice of Intent to Sue.*

ARKEMA TOXIC RELEASES- AUGUST 29, 2017 - SEPTEMBER 3, 2017

As Hurricane Harvey swept up in from the Gulf, residents of Crosby, Texas were left unprotected from the toxic chemicals stored, used, processed and produced in Arkema's plant at the intersection of Eastgate Crosby Road and Highway 90.

At their chemical plant in Crosby, Texas, the Arkema Defendants used, controlled, stored, manufactured, distributed, transported, and disposed of hundreds of known toxic chemicals used in the production of the Luperox(™) family of chemicals used in the production of plastic bottles.

In the early hours of Tuesday, August 29, 2017, Arkema called Harris County Emergency Services requesting that Highway 90 be shut down because of a release into the flood waters.

By mid-day Tuesday, National Guard troops were evacuating residents from a 1.5 mile exclusion zone around Arkema's facility, warning them not of a chemical release into the surface waters but only of the risk of explosion.

August 31, 2017 marked the beginning of three explosions culminating with the allegedly controlled ignition on September 3, 2017 of six refrigerated trucks reportedly containing plastic containers filled with organic peroxide. These explosions resulted in thick, rolling plumes of toxic smoke that mixed in the wind of the storm to rain ash, dust and particulate matter throughout the area.

Scientific testing reveals the presence of three families of toxins, PAHs, SVOCs, and heavy metals in ash, soil and dust samples taken from class members' property which correlates to toxins present in Arkema's Luperox(™) product line manufactured at their Crosby facility.

Residents and First Responders breathed a toxic mixture of Arkema's chemicals released into the air, sustained additional exposure through dermal contact with contaminated flood waters and face a potential continuing risk of inhalation, dermal and ingestion exposure to particulate matter that deposited or precipitated in soil and or on exposed surfaces. Many of those exposed to the toxins experienced negative health effects symptoms, some of which have persisted long after exposure has ended.

Relying on Arkema's characterization of the toxic releases emanating from the Arkema site, government officials established an exclusion zone of 1.5 miles from the Akrema plant. Given the toxicity of the substances released, the 1.5 mile perimeter was not far enough to adequately protect either First Responders or those living beyond the perimeter who were not evacuated. Residents living within the exclusion zone suffered enhanced damage to their property because mold was allowed to grow unabated in their homes for eight days until the 1.5 mile exclusion zone order was lifted.

ENVIRONMENTAL INVESTIGATION

Before issuing this Notice of Intent to File Citizen's Suit, the Citizens through undersigned counsel embarked upon a scientific investigation of the environmental impact of the unpermitted releases by Arkema related to its failure to maintain containment of its wastewater tanks and the dispersion of toxic material resulting from the ignition of Arkema's Luperox(™) chemical.

The Citizens witnessed not only the black plumes of smoke accompany each explosion but also noticed a strange ash material and a mysterious black residue on the ground.

Sampling of ash material deposited in yards from the Arkema Plant's unpermitted discharge, surface water, soils, drinking well water, surface dust, and other bulk materials has been performed by Downstream Strategies, LLC of Morgantown, West Virginia to investigate impacts from the Arkema Plant explosion on residential properties surrounding the Arkema Plant.[1] The collected samples have been analyzed for heavy metals and cyanide, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polycyclic aromatic compounds (PAHs), Dioxins, Furans, and Tentatively Identified Compounds (TICs). Results received to date have identified compounds from each of these analytical groups. *See Exhibit 2- Letter from Marc Glass; See also Enclosed CD-ROM: Exhibit 3- Results- Master Spreadsheet, Exhibit 4- Sample Location Database.*

Analysis of Downstream's testing for metals and inorganics revealed detections for a number of metals: aluminum, antimony, barium, calcium, chromium, cobalt, copper, iron, lead, manganese, nickel, potassium, sodium, thallium, vanadium, zinc, and cyanide. While these metals are found in the Earth's crust, their appearance consistently throughout the samples indicates a potential linkage to activities at the Arkema facility. The concentrations of aluminum, barium, calcium and zinc present a marker establishing an environmental pathway even if the detected concentrations fall below levels expected to cause negative health impacts.

[1] All of the samples have been given alphanumeric identifiers and identified by distance from the Arkema Plant.

Testing also revealed a number of Volatile Organic Compounds (VOCs): acetone, bromodichloromethane, bromoform, chloroform, dibromochloromethane. The EPA classified bromoform as a probable human carcinogen and dibromochloromethane as a possible human carcinogen. There is evidence that eating or drinking bromodichloromethane causes liver, kidney, and intestinal cancer in rats and mice. The Department of Health and Human Services (DHHS) has determined that bromodichloromethane is reasonably anticipated to be a human carcinogen.

Lab tests identified semi-volatile organic compounds (SVOCs): benzoic acid, bis(2-ethylhexyl)phthalate, di-n-butyl phthalate. Additionally, GCMS analysis revealed the presence of several SVOC Tentatively Identified Compounds (TICs): Unknown hydrocarbons, unknown compounds, azuleno [4,5-b]furan-2,9-dione; decahydro, n-hexadecanoic acid; gamma sitosterol, 1-hexanol; 2-ethyl-, hexanoic acid; 2-ethyl-, diethyltoluamide; hexanoic acid; butanoic acid, ethane, 1,1,2,2-tetrachloroethane.

Tests of ash samples, surface water samples and soil samples revealed the presence of the following polycyclic aromatic hydrocarbons (PAHs): acenaphthylene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, pyrene, and 2-methylnaphthalene.

Disturbingly, testing also found detections of the following Dioxins and Furans: 2,3,7,8-tetrachlorodibenzodioxin (tcdd), pentachlorodibenzo-p-dioxin (12378-pecdd), hexachlorodibenzo-p-dioxin, heptachlorodibenzo-p-dioxin, octachlorodibenzo-p-dioxin, tetrachlorodibenzofuran, pentachlorodibenzofuran, hexachlorodibenzofuran, heptachlorodibenzofuran, octachlorodibenzofuran, pentachlorodibenzo-p-dioxin.

CLEAN WATER ACT VIOLATIONS

In accordance with section 505 of the Water Pollution Control Act ("the Clean Water Act" or "the CWA"), 33 U.S.C. § 1365, and 40 C.F.R. Part 135, Subpart A, the Citizens hereby notify you that Arkema, Inc. ("Arkema"), has violated, and continues to violate, "an effluent standard or limitation" under Section 505(a)(1)(A) of the CWA, 33 U.S.C. § 1365(a)(1)(A), by failing to comply with the terms of the (National) Texas Pollution Discharge Elimination System ("TPDES") Permit TXR05CZ27. Furthermore, Arkema is in ongoing and continuing violation of section 301 of the CWA, 33 U.S.C. § 1311, as a result of the unpermitted and unlawful discharge of 23,608.01 lbs of hazardous chemicals including, 558.77 of ethylbenzene, 11,175.39 of mineral spirits, 558.77 of naptha, 558.77 of naphthalene, 1396.92 of organic peroxides, 3073.23 of trimethylbenzene, 2793.85 of tert-butyl alcohol, 698.46 of 2,5 dimethyl-2,5 di(t-butylperoxy)hexane and 2,793.85 of t-amyl alcohol and an array of unknown breakdown chemicals into Cedar Bayou.

If within sixty (60) days of the postmark of this correspondence, Arkema does not bring itself into full compliance with the CWA, the neighbors of the Arkema Plant intend to file a Citizens' Suit seeking civil penalties for Arkema's ongoing and continuing violations and for an injunction compelling it to come into compliance with the CWA.

Section 301 of the CWA makes unlawful the discharge of any pollutant by any person into navigable waters of the U.S., except in compliance with an NPDES permit. Arkema discharges stormwater and wastewater under general permit TPDES TXR05CZ27. That permit does not allow for the discharge of ethylbenzene, mineral spirits, naptha, naphthalene, organic peroxides, trimethylbenzene,tert-butyl alcohol, 2,5 dimethyl-2,5 di(t-butylperoxy)hexane and t-amyl alcohol.

Due to poor plant design as well as negligent actions and inactions by Arkema, during and after Hurricane Harvey, large quantities of hazardous chemicals spilled onto the soils of the Arkema Crosby Plant. These chemicals include but are not limited to: ethylbenzene, mineral spirits, naptha, naphthalene, organic peroxides, trimethylbenzene, tert-butyl alcohol, 2,5 dimethyl-2,5 di(t-butylperoxy)hexane and t-amyl alcohol.

Since the dates that these spills occurred, the Arkema plant soil is believed to be heavily contaminated. Rainwater now interacts with these contaminated soils and discharges into Cedar Bayou. These discharges contain contaminants which are not specifically permitted under TPDES TXR05CZ27. Furthermore, discharges that would cause or contribute to a violation of water quality standards, or that would fail to protect and maintain existing designated uses of receiving waters are not eligible for coverage under TPDES TXR05CZ27. Cedar Bayou is designated for recreational purposes included fishing. Arkema's discharges into Cedar Bayou fail to protect and maintain those uses.

As mentioned above, if Arkema fails to come into compliance with the CWA, we intend to file a citizen suit under section 505(a)(1) of the Act seeking these civil penalties as well as injunctive relief against those parties responsible for this catastrophe. If Arkema does not advise us of sufficient remedial actions taken during this 60-day period, we will assume that no remedial actions have been taken. This notice of intent is sufficient to allow a citizen suit against Arkema for any similar violations after December 1st, 2017.

RCRA

Additionally, this letter shall serve as notice, in accordance with Section 7002 of the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. § 6972, that Arkema is in violation of standards and permits under RCRA and that its disposal of Luperox products presents an imminent and substantial endangerment to health and the environment.

Pursuant to RCRA Section 7002(a)(1)(A) citizens may commence a citizen suit against "any person.... who is alleged to be in violation of any permit, standard, regulation, condition, requirement, prohibition, or order" under RCRA. 42 U.S.C. § 6972(a)(1)(A).

Pursuant to RCRA Section 7002(a)(1)(B), citizens may commence a citizen suit against "any person," "including any past or present generator, past or present transporter, or past or present owner or operator of a treatment, storage, or disposal facility who has contributed or who is contributing to the past or present handling, storage, treatment, transportation, or disposal of any solid or hazardous waste which may present an imminent and substantial endangerment to health or the environment." RCRA § 7002(a)(1)(B), 42 U.S.C. § 6972(a)(1)(B).

Pursuant to 42 U.S.C. § 6903(15), the Arkema Defendants are "persons" subject to the citizen suit provisions of RCRA, 42 U.S.C. § 6972. The Luperox products, including the products' toxic ingredients and waste products, are "solid waste" under RCRA section 1004 because they are "discarded material." 42 U.S.C. § 6903(27). A "discarded material is any material which is abandoned," including material "abandoned by being… burned or incinerated, or accumulated [or] stored before being abandoned by being disposed of, or burned or incinerated." 40 CFR §261.2. The foregoing are also considered "hazardous waste" under RCRA section 1004 [42 U.S.C. § 6903(5)] because they are "ignitable," as defined in 40 CFR §261.21.

Arkema has engaged in the storage and/or disposal of hazardous wastes by abandoning the facility on the night of August 30th and leaving the Luperox products, including the products' toxic ingredients and waste products, to explode and/or leak, and have thus contributed to and are contributing to the past and present storage and/or disposal of hazardous waste under RCRA.

Arkema's inadequate storage and unpermitted disposal of Luperox products, including the products' toxic ingredients and waste products, violated standards applicable to generators of hazardous waste issued under 42 U.S.C. § 6922 and permits for storage or disposal of hazardous issued under 42 U.S.C. § 6925. Arkema had no permit allowing the disposal of hazardous waste under RCRA by the incineration of Luperox products or the leaking of waste water tanks. Arkema is in ongoing and continuing violation of as a result of the unpermitted and unlawful discharge from:

-two wastewater tanks which spilled 23,608.01 lbs of toxins into the ditch line which drains into Cedar Bayou including, 558.77 of ethylbenzene, 11,175.39 of mineral spirits, 558.77 of naptha, 558.77 of naphthalene, 1396.92 of organic peroxides, 3073.23 of trimethylbenzene, 2793.85 of tert-butyl alcohol, 698.46 of 2,5 dimethyl-2,5 di(t-butylperoxy)hexane and 2,793.85 of t-amyl alcohol into Cedar Bayou. *Source TDEQ.*

- three ignitions of refrigerated tractor trailers releasing 62,394.44 lbs including, 2287.68 of ethylhexanol, 573.13 of ethyl hexaldehyde, 2920.26 of acetone, 2672.88 of acetophenone, 60.7 of ethane, 5174.92 of nonane, 1702.67 of nonene, 816.6 of isobutane, 262.76 of isobutene, 64.32 of N-propanol, 20180 of PM2.5, 9982.98 of carbon monoxide, 5.33 of SO2, 554.16 of NO2 and 15136.05 of other VOCs partially from burning diesel. *Source TDEQ*

Furthermore, Arkema's storage and/or disposal of hazardous waste contributed and continues to contribute to the contamination of PAHs, dioxins, volatiles, and semivolatiles in the area surrounding its facility, presenting an imminent and substantial endangerment to health and the environment.

If within sixty (60) days of the postmark of this correspondence, Arkema does not bring itself into full compliance with RCRA standards and permits and abate this imminent and substantial endangerment to health and the environment, the neighbors of the Arkema Plant intend to file a Citizens' Suit seeking an injunction enjoining this imminent and substantial endangerment to health and the environment and for an injunction compelling it to come into compliance with RCRA.

CERCLA

This letter also serves as notice that that the Arkema is liable for its release of hazardous substances under Section 107(a) of the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA"), 42 U.S.C. § 9607(a), for response costs incurred, damages to natural resources (including assessment costs), and the cost of necessary health assessment and/or health effects studies.

Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), provides, in part: (1) the owner and operator of a vessel or a facility; (4) ...from which there is a release, or a threatened release which causes the incurrence of response costs, of a hazardous substance, shall be liable for –... (B) any other necessary costs of response incurred by any other person consistent with the national contingency plan; (C) damages for injury to, destruction of, or loss of natural resources, including the reasonable costs of assessing such injury, destruction, or loss resulting from such a release; (D) the costs of any health assessment or health effects study carried out under section 9604(i) of this title.

Each Arkema defendant is "person" within the meaning of Section 101(21) of CERCLA, 42 U.S.C. § 9601(21). Each Arkema defendant is a current "owner and operator of a vessel or facility" under 42 U.S.C. § 9607(a). CERCLA Section 101(9) defines "facility" to include "(A) any building, structure, installation, equipment, ... storage container, ...or (B) any site or area where a hazardous substance has been deposited, stored, disposed of, or placed, or otherwise come to be located . . . ." 42 U.S.C. § 9601(9).

The explosion and spilling of Luperox products at the Arkema facility constitute "emitting," "escaping," and /or "disposing into the environment", and are thus "releases" as defined under 42 U.S.C. §9601(22). The Luperox products are "hazardous substances" as defined by 42 U.S.C. § 9601(14), as they are considered "hazardous wastes" under RCRA for the reasons discussed above.

Plaintiffs have incurred response costs responding to the Arkema's release of hazardous substances, in the form of substantial investigation and sampling costs necessary to determine the nature and extent of the releases and contamination of the area around the Arkema facility. These costs now approach $100,000 spent on collecting environmental samples and lab fees for the analysis of said sampling protocols. The response costs incurred by the Plaintiffs are consistent with the National Contingency Plan, 40 C.F.R. Part 300.

The releases of hazardous substances occurred at a facility owned and operated by the Arkema, who is therefore "liable" for response costs under § 107(a) of CERCLA, 42 U.S.C. § 9607(a)(1). Plaintiffs seek to recover response costs from Arkema and any other available relief under CERCLA Section 107(a).

CONCLUSION

Arkema could have prevented or avoided this accident with better precautionary measures, compliance with applicable regulations, and the use of reasonable care. The foreseeable risks of harm posed could have been reduced or avoided by reasonable instructions or warnings when it became clear that toxins had been released into the environment. Exposure to this toxic mixture in the environment through human pathways caused bodily injury and has created a need for a community-wide remediation effort, changes in Arkema's operation and a medical monitoring program to protect the public from risk.

Sincerely,

M.F. Underwood

Mark F. Underwood, Esq.

MFU/nh
Enclosures

EXHIBIT 1

Name	Address	City	State	Zip
Aburto, Mr. Sylbestre	4793 Lord Rd.	Crosby	TX	77532
Alexander, Giovanni D'Shea Lynn	114 Cottontail Dr.	Crosby	TX	77532
Alexander, Ms. Billie	603 Cypress Ave.	Crosby	TX	77532
Allen, Alexis	P.O. Box 96001	Houston	TX	77213
Alphonse, Joshua	12813 Sleepytime	Crosby	TX	77532
Arceneaux, Mr. Darrell	416 Zinn Dr.	Crosby	TX	77532
Ardoin, Mr. Randle Joseph	229 Cypress Ave.	Crosby	TX	77532
Ardoin, Ms. Jada	229 Cypress Ave.	Crosby	TX	77532
Ballard, Mr. Robert	118 Barrett Rd.	Crosby	TX	77532
Banks, Ms. Evelena	14450 FM 2100 pmb#136	Crosby	TX	77532
Barnaba, Mr. Roddrick James	307 Cypress Ave.	Crosby	TX	77532
Bass, Ms. MarQuisha	6616 FM 2100, Apt. 13	Crosby	TX	77532
Beavers, Ms. Gwendolyn	1502 Ambroden Ln.	Channelview	TX	77530
Bellard, Ms. Nemar	13306 Cliff Dr.	Crosby	TX	77532
Belton, England	11803 Myrtle Ave.	Crosby	TX	77532
Belton, Mr. Jaliel	11803 Myrtle Ave.	Crosby	TX	77532
Bradford, Mr. Lethia	6616 FM 2100, Apt. 13	Crosby	TX	77532
Bradford, Ms. Chelsea	6616 FM 2100, Apt. 13	Crosby	TX	77532
Bradford, Ms. Martha	6616 FM 2100, Apt. 13	Crosby	TX	77532
Bradford, Ms. Shonda	6616 FM 2100, Apt. 13	Crosby	TX	77532
Bradley, Mr. Arthur	118 Barrett Rd.	Crosby	TX	77532
Bradley, Mr. Datric	118 Barrett Rd.	Crosby	TX	77532
Breckman, Miss Melanie	5030 Melanie Lane	Crosby	TX	77532
Breckman, Mr. Daniel James	5030 Melanie Lane	Crosby	TX	77532
Breckman, Mr. Ransom	5030 Melanie Lane	Crosby	TX	77532
Breckman, Ms. Ida	5030 Melanie Lane	Crosby	TX	77532
Brigman, Mr. Thaddeus J.	P.O. Box 470	Barrett Station	TX	77532
Brigman, Ms. Gay J.	P.O. Box 470	Barrett Station	TX	77532
Brinkley, Mr. Vincent	606 Cypress Dr.	Crosby	TX	77532
Brinkley, Mrs. Yolanda Jackson	606 Cypress Dr.	Crosby	TX	77532
Britton, Thomas James	1502 Ambros Den Lane	Channelview	TX	77530
Brooks, Jamie	6 CR 4894	Dayton	TX	77535
Brooks, Miss Elizabeth	6 CR 4894	Dayton	TX	77535
Brooks, Mr. Casey	6 CR 4894	Dayton	TX	77535
Brooks, Mr. Quincy	12512 Judge St.	Crosby	TX	77532

Name	Address	City	State	Zip
Buckner, Mr. Lex Anthony	156 FM 1942	Crosby	TX	77532
Buckner, Mr. Lyle	156 FM 1942	Crosby	TX	77532
Buckner, Mrs. Jennie L.	156 FM 1942	Crosby	TX	77532
Buckner, Mrs. Lorrie	156 FM 1942	Crosby	TX	77532
Bushnell, Ms. Bermadine	6616 FM 2100, Apt. 75	Crosby	TX	77532
Campbell, Ms. Linda V.	407 Blinkin	Crosby	TX	77532
Carr, Angel Ann	422 E. St. Charles Dr.	Crosby	TX	77532
Carr, Mr. Brian Duane	422 E. St. Charles Dr.	Crosby	TX	77532
Carrier, Palma	2111 1/2 FM 1942 Rd.	Crosby	TX	77532
Carrin, Sr., Fredrick Dwaine	11730 Holly Road	Crosby	TX	77532
Cartwright, Jasmine	207 Winkin Avenue	Crosby	TX	77532
Cartwright, Kiev	207 Winkin Avenue	Crosby	TX	77532
Cartwright, Ms. Kimberly Rena	604 Cypress Ave.	Crosby	TX	77532
Cartwright, Ms. Teleisha LaVon	114 Cottontail Dr.	Crosby	TX	77532
Cartwright-Palmer, Kristi	207 Winkin Avenue	Crosby	TX	77532
Conner, Ms. Kahmayia	12514 Judge St.	Crosby	TX	77532
Cooks, Laquisha Walker	12813 Sleepytime	Crosby	TX	77532
Criner, Ms. Latishe	2111 1/2 FM 1942 Rd.	Crosby	TX	77532
Crummel, Mr. Zack	18831 Sunset Trails Street	Crosby	TX	77532
Curette, Cody	12813 Sleepytime	Crosby	TX	77532
De Aburto, Elfega	4793 Lord Rd.	Crosby	TX	77532
DeBose, Mr. Lester	304 Krenek Rd., #66	Crosby	TX	77532
DeBose, Ms. Shelia	304 Krenek Rd., #66	Crosby	TX	77532
Dixon, Mr. Charles	P.O. Box 1644	Crosby	TX	77532
Dixon, Ms. Charnell Shanice	P.O. Box 1644	Crosby	TX	77532
Dixon, Vergie	P.O. Box 1644	Crosby	TX	77532
Driver, Ms. Betty	6616 FM 2100, Apt. 61	Crosby	TX	77532
Duff, Mrs. Priscilla	312 Magnolia	Crosby	TX	77532
Duffy, Horace J.	312 Magnolia Avenue	Barrett Station	TX	77532
Duffy, Priscilla	312 Magnolia Avenue	Barrett Station	TX	77532
Eagleton, Ms. Gertrude	201 Magnolia Ave.	Crosby	TX	77532
Edwards, Mr. Vincent	603 Cypress Ave.	Crosby	TX	77532
Ellis, Ms. Lisa	17910 Ladue Rd.	Crosby	TX	77532
Erwin, Ms. Apryl Malveaux	12521 Alma St.	Crosby	TX	77532
Flannel, Mr. Roland	242 Cypress	Crosby	TX	77532

Name	Address	City	State	Zip
Flannel, Ms. Bevely	242 Cypress Ave.	Crosby	TX	77532
Fondel, Ms. Karen	6616 FM 2100, #63	Crosby	TX	77532
Forcha, Mr. Alvin	308 Nod Ave.	Crosby	TX	77532
Forcha, Mr. Bryant	308 Nod Ave.	Crosby	TX	77532
Forcha, Ms. Gloria	308 Nod Ave.	Crosby	TX	77532
Fox, Ms. Rusti Lynne	4611 Lord Rd.	Crosby	TX	77532
Francios, Eddie	P.O. Box 16	Lake Charles	LA	70602
Frank, Derrick D	6616 FM 2100, Apt. 75	Crosby	TX	77532
Frank, Mr. Armani	12813 Sleepytime	Crosby	TX	77532
Frank, Mrs. Stacey	P.O. Box 3211	Crosby	TX	77532
Frank, Ms. Amanda	P.O. Box 3211	Crosby	TX	77532
Frank, Ms. Stephanie	P.O. Box 302	Crosby	TX	77532
Frank, Ms. Tandeka	6616 FM 2100, Apt. 25	Crosby	TX	77532
Frank, Sr., Mr. Demond Alfred	P.O. Box 3211	Crosby	TX	77532
Freeman, Ms. Brandy	6616 FM 2100 Rd., Apt. 27	Crosby	TX	77532
Freeman, Ms. Deidra	714 Magnolia Ave.	Crosby	TX	77532
Freeman, Ms. Krystle	714 Magnolia	Crosby	TX	77532
Fussell, Casen	806 Liberty Way	Crosby	TX	77532
Fussell, Mr. Spencer L.	806 Liberty Way	Crosby	TX	77532
Fussell, Triniti	806 Liberty Way	Crosby	TX	77532
Gallow, Ymonica	126 1/2 Antoinette	Crosby	TX	77532
Garcia, Miss Serina	4806 Woodmount Dr.	Houston	TX	77045
Garcia, Serina	4806 Woodmont	Houston	TX	77045
Garrett, Mr. Jamendric	310 Dreamland Avenue	Crosby	TX	77532
Garza, Jr., Mr. Alfredo	4781 Lord Rd.	Crosby	TX	77532
Garza, Mr. Alfredo	4781 Lord Rd.	Crosby	TX	77532
Garza, Mr. Isaac	4727 Lord Rd.	Crosby	TX	77532
Garza, Ms. J. Guadalupe	4727 Lord Rd.	Crosby	TX	77532
Garza, Ms. Maria	4781 Lord Rd.	Crosby	TX	77532
Garza, Ms. Merari	4727 Lord Rd.	Crosby	TX	77532
Garza, Rafaela	4781 Lord Rd.	Crosby	TX	77532
Godfrey, Mr. Clarence	603 Cypress Ave.	Crosby	TX	77532
Gonzales, Miss Elancyian Perez	114 Cottontail Dr.	Crosby	TX	77532
Gradney, Mr. James	P.O. Box 3049	Crosby	TX	77532
Gradney, Mrs. Rosie L.	P.O. Box 3049	Crosby	TX	77532

Name	Address	City	State	Zip
Griffith, Mr. Allen	518 Cypress	Crosby	TX	77532
Griffith, Ms. Lizzie	518 Cypress	Crosby	TX	77532
Guerra, Daisy	15252 Grand Point	Houston	TX	77090
Guillory, Ms. Elizabeth	215 Antoinette Ln.	Crosby	TX	77532
Harris, Larry	11914 Penn Street	Crosby	TX	77532
Harris, Mr. Reggie	11914 Penn St.	Crosby	TX	77532
Harris, Peggie J.	11914 Penn Street	Crosby	TX	77532
Harrison, Ms. Lakeisha	304 Krenek Rd. #21	Crosby	TX	77532
Henry, Mr. Raynard E.	304 Krenek Rd., #71	Crosby	TX	77532
Henry, Ms. Brianna	5030 Methvin Ln.	Crosby	TX	77532
Hildreth, Ms. Betty	P.O. Box 397	Crosby	TX	77532
Hill, Mr. Joe	410 Wisdom St.	Crosby	TX	77532
Hollins, Mr. Willie	2111 1/2 FM 1942 Rd.	Crosby	TX	77532
Huff, Mr. Albert	13103 FM 2100 Crosby Lynchburg Rd.	Crosby	TX	77532
Jackson, Ms. Keisha M.	12514 Judge Street	Crosby	TX	77532
Jackson, Ms. Rosa	12514 Judge Street	Crosby	TX	77532
Jackson-Pugh, Ms. Hattie	606 1/2 Cypress Dr.	Crosby	TX	77532
Jelks, Mr. Terrence L.	12813 Sleepytime	Crosby	TX	77532
Jones, Ms. Retha	410 Wisdom St.	Crosby	TX	77532
Juarez, Mr. Esteban	4781 Lord	Crosby	TX	77532
Juarez, Ms. Isabel	4781 Lord Rd.	Crosby	TX	77532
Judge, Mr. Dwight A.	634 Ruben White Dr.	Crosby	TX	77532
Judge, Mr. John Allen	626 Rueben White Dr.	Crosby	TX	77532
Judge, Ms. Irma	626 Rueben White Dr.	Crosby	TX	77532
Judge, Ms. Nashelle	625 1/2 Cottontail Dr.	Crosby	TX	77532
Judge, Ms. Violet	634 Ruben White Dr.	Crosby	TX	77532
Kelsoe, Mr. Chris	5030 Methvin Ln.	Crosby	TX	77532
LaCour, Kenadi	16310 Stingray	Crosby	TX	77532
LaCour, Mr. Jonas	16310 Stingray Dr.	Crosby	TX	77532
LaCour, Ms. Carol Renee	16310 Stingray Dr.	Crosby	TX	77532
LaCour, Ms. Janae	16310 Stingray	Crosby	TX	77532
Lavan, Ms. Vanessa	229 Cypress Ave.	Crosby	TX	77532
Leal, Mr. Alan	4775 Lord Rd.	Crosby	TX	77532
Leal, Mr. Alberto	4775 Lord Rd.	Crosby	TX	77532
Leal, Mr. Diego	4775 Lord Rd.	Crosby	TX	77532

Name	Address	City	State	Zip
Leal, Ms. Olga	4775 Lord Rd.	Crosby	TX	77532
Leonard, Mr. Charles T.	806 Liberty Way	Crosby	TX	77532
Leonard, Mrs. Melissa F.	806 Liberty Way	Crosby	TX	77532
Lewis, Mr. Donald	402 Elm Ave.	Crosby	TX	77532
Lewis, Mr. Richard	P.O. Box 3481	Crosby	TX	77532
Lockett, Mr. Jerome	P.O. Box 3081	Crosby	TX	77532
Lockett, Mrs. Cynthia	P.O. Box 3481	Crosby	TX	77532
Lockett, Ms. Mamie	229 Cypress	Crosby	TX	77532
Lopez, Ms. Lucia A.	4787 Lord Rd.	Crosby	TX	77532
Lopez, Ms. Martha Eunice	4727 Lord Rd.	Crosby	TX	77532
Luten, Mr. Dustin	12112 Saint Cecelia Dr.	Crosby	TX	77532
Luten, Ms. Haylee	12112 Saint Cecelia Dr.	Crosby	TX	77532
Luten, Ms. Laylin	12112 Saint Cecelia Dr.	Crosby	TX	77532
Luten, Ms. Nicole	12112 Saint Cecelia Dr.	Crosby	TX	77532
Lyons, Mr. Keith	3330 Euell	Crosby	TX	77532
Malveaux, Mr. Leroy	12521 Alma	Crosby	TX	77532
Malveaux, Mr. Lionel	207 Blinkin Ave.	Crosby	TX	77532
Malveaux, Ms. Bertha	207 Blinkin Ave.	Crosby	TX	77532
Malveaux, Ms. Jacqueline	12521 Alma St.	Crosby	TX	77532
Martinez, Mr. Antonio	4070 Felscher Ln.	Crosby	TX	77532
Mathis, Mr. Michael D.	207 E. St. Charles Dr.	Crosby	TX	77532
Matthews, Tracey	619 Zinn Dr.	Crosby	TX	77532
May, Mr. Jessie J.	304 Krenek Rd., Apt. 79	Crosby	TX	77532
May, Ms. Latosha D.	304 Krenek Rd., Apt. 79	Crosby	TX	77532
May, Ms. Stella	304 Krenek Rd., Apt. 71	Crosby	TX	77532
May, Stella L.	304 Krenek Road Apt. 71	Crosby	TX	77532
McCrea, Mr. Willie	11803 Myrtle Ave.	Crosby	TX	77532
McCrea, Ms. Brilela	11803 Myrtle Ave.	Crosby	TX	77532
Merritt, Ms. Mary	227 E. Melville Dr.	Crosby	TX	77532
Mitchell, Mr. Kendall	304 Krenek Rd., Apt. #71	Crosby	TX	77532
Mitchell, Ms. Caroline	304 Krenek Rd., Apt. 69	Crosby	TX	77532
Mitchell, Ms. Emma	304 Krenek Rd., Apt. 70	Crosby	TX	77532
Mitchell, Ms. Laura	12607 Crosby Lynchburg Rd.	Crosby	TX	77532
Mitchell, Richeal	304 Krenek Rd., Apt. 70	Crosby	TX	77532
Monday, Mr. Otis J.	P.O. Box 598	Highlands	TX	77562

Name	Address	City	State	Zip
Monday, Mrs. Sandra J.	P.O. Box 598	Highlands	TX	77562
Moore, Diana Demetria	304 Krenek Road Apt. 71	Crosby	TX	77532
Moore, Dorian	230 Cypress Ave.	Crosby	TX	77532
Moore, Ms. Debra	230 Cypress Ave.	Crosby	TX	77532
Moore, Ms. Diane	4400 Sherri Ln.	Crosby	TX	77532
Moore, Ms. Jeanette	1922 Silverdale St.	Houston	TX	77029
Morgan, Ms. Gloria Dean	13529 Milo Dr.	Crosby	TX	77532
Morrow, Jr., Mr. Melvin	242 Cypress Ave.	Crosby	TX	77532
Morrow, Ms. Rotisha	242 Cypress	Crosby	TX	77532
Morrow, Sr., Mr. Melvin	611 Cypress Ave.	Crosby	TX	77532
Murray, Mrs. Alisia Lee	610 Cypress Ave.	Crosby	TX	77532
Narcisse, Ms. Cheryl	13317 Milo Dr.	Crosby	TX	77532
Nevels, Ms. Anita	304 Krenek Rd. #21	Crosby	TX	77532
Nichols, Mr. Kalvin	229 Cypress Ave.	Crosby	TX	77532
Nickerson, Catherine	600 Cypress Avenue	Crosby	TX	77532
Nickerson, Ms. Catherine	600 Cypress Ave.	Crosby	TX	77532
Norman, Mr. Lance	4419 Sherri Ln.	Crosby	TX	77532
Norman, Mrs. Madelina Tita	4419 Sherri Ln.	Crosby	TX	77532
Palmer, Maurice	207 Winkin Avenue	Crosby	TX	77532
Paul, Stephanie	11914 Penn Street	Crosby	TX	77532
Peraza, Mr. Jose	4787 Lord Rd.	Crosby	TX	77532
Phelps, Mr. Howard David	5030 Methvin Lane	Crosby	TX	77532
Phelps, Mrs. Kelly	5030 Methvin Lane	Crosby	TX	77532
Ramos, Daisy	16719 Scamper Ln.	Crosby	TX	77532
Ramos, Gerardo	16719 Scamper Ln.	Crosby	TX	77532
Ramos, Jr., Ramiro	16719 Scamper Ln.	Crosby	TX	77532
Ramos, Mr. Ramiro	16719 Scamper Ln.	Crosby	TX	77532
Ramos, Mrs. Karina	16719 Scamper Ln.	Crosby	TX	77532
Randle, Ms. Shirley Ann	11910 Orleans, #B	Crosby	TX	77532
Randolph, Ms. Taneisha	118 Barrett Rd.	Crosby	TX	77532
Rector, Ms. Juanita	13607 Cedar Grove Dr.	Crosby	TX	77532
Reed, Mr. Albert	304 Krenek Rd., #96	Crosby	TX	77532
Reed, Ms. Patricia	607 E. Melville Dr.	Crosby	TX	77532
Rhone, Ms. Joyce	218 Elm Ave.	Crosby	TX	77532
Richard, Mr. Isaiah	120 Antoinette Ln.	Crosby	TX	77532

Name	Address	City	State	Zip
Richard, Mr. Paul	120 Antoinette Ln.	Crosby	TX	77532
Richard, Ms. Delonda	120 Antoinette Ln.	Crosby	TX	77532
Richard, Tyrek	120 Antoinette Ln.	Crosby	TX	77532
Roberson, Mr. Harvey	407 Topsail Way	Crosby	TX	77532
Roberson, Mrs. Helen	407 Topsail Way	Crosby	TX	77532
Robertson, Perry	P.O. Box 96001	Houston	TX	77213
Robinson, Kebbien DeShawn	218 Oak Ave.	Crosby	TX	77532
Robinson, Mr. Ervin	218 Oak Ave.	Crosby	TX	77532
Robinson, Mr. Irvin	218 Oak Ave.	Crosby	TX	77532
Robinson, Ms. Jessica Dene	218 Oak Ave.	Crosby	TX	77532
Robinson, Ms. Latashia	218 Oak Ave.	Crosby	TX	77532
Robinson, Ms. Tawana	214 Oak St.	Crosby	TX	77532
Rodriguez, Mr. Raymundo	4739 Lord Rd.	Crosby	TX	77532
Rogers, Mr. David	3040 Ramsey Loop Rd.	Crosby	TX	77532
Rogers, Ms. Donna	3040 Ramsey Loop Rd.	Crosby	TX	77532
Rollison, Ms. April	11803 Myrtle Ave.	Crosby	TX	77532
Rose, Mr. Henry	304 Krenek Rd., Apt. 71	Crosby	TX	77532
Salazar, Ms. Yolanda	4739 Lord Rd.	Crosby	TX	77532
Sellers, Jr., Mr. Michael	307 Mako Ct.	Crosby	TX	77532
Sellers, Mr. Landon	307 Mako Ct.	Crosby	TX	77532
Sellers, Mr. Matthew	307 Mako Ct.	Crosby	TX	77532
Sellers, Mrs. Nicole	307 Mako Ct.	Crosby	TX	77532
Sellers, Ms. Lane	307 Mako Ct.	Crosby	TX	77532
Sherman, Ms. Monique	604 Cypress Ave.	Crosby	TX	77532
Simmons, Mr. Clyde	213 Cypress	Crosby	TX	77532
Simmons, Mrs. Cynthia	213 Cypress	Crosby	TX	77532
Small, Ms. Velma	201 Magnolia Ave.	Crosby	TX	77532
Smith, DuJuan	11803 Myrtle Ave.	Crosby	TX	77532
Smith, Jr., Mr. Harvey	521 Cypress Ave.	Crosby	TX	77532
Smith, Ms. Patricia	6616 FM 2100, Apt. 13	Crosby	TX	77532
Smith, Ms. Tashauna	604 Cypress Ave.	Crosby	TX	77532
St. Romain, Mr. Alfred	603 Magnolia	Crosby	TX	77532
St. Romain, Mrs. Martha	603 Magnolia Avenue	Crosby	TX	77532
Stanley, Mr. Roosevelt	127 Antoinette Ln.	Crosby	TX	77532
Stanley, Ms. Angela	127 Antoinette Ln.	Crosby	TX	77532

Name	Address	City	State	Zip
Stanley, Ms. Janice	127 Antoinette Ln.	Crosby	TX	77532
Stewart, Mr. Mark	408 Blinkin Ave.	Crosby	TX	77532
Stewart, Mr. Tramonte' Jermaine	114 Cottontail Dr.	Crosby	TX	77532
Stoot, Mr. Peter	406 Barrett Road	Crosby	TX	77532
Stoot, Ms. Jerrylean	406 Barrett Road	Crosby	TX	77532
Tanner, Ms. Viola	4806 Woodmount Dr.	Houston	TX	77045
Taylor, Mr. Shuncey	6616 FM 2100	Crosby	TX	77532
Theobald, Mr. George	17111 Adlong School Rd.	Crosby	TX	77532
Theobald, Ms. Linda	17111 Adlong School Rd.	Crosby	TX	77532
Thomas, Ms. Carol A.	P.O. Box 3211	Crosby	TX	77532
Thompson, Mr. Darryl	304 Krenek, Apt. 79	Crosby	TX	77532
Turner, Mr. James	510 Red Oak Avenue	Crosby	TX	77532
Turner, Ms. Dorothy	510 Red Oak Avenue	Crosby	TX	77532
Verrette, Ms. Porsha	703 N. Hyannis Port St.	Crosby	TX	77532
Verrette-Whitfield, Mr. Marquis Isaiah	703 N. Hyannis Port St.	Crosby	TX	77530
Villareal, Mr. Ezequiel	1728 Crosby Dayton Rd.	Crosby	TX	77532
Villareal, Mrs. Irma	1728 Crosby Dayton Rd.	Crosby	TX	77532
Walker Cooks, Ms. Laquisha	12813 Sleepytime	Crosby	TX	77532
Walker, Erica	12813 Sleepytime	Crosby	TX	77532
Walker, Gwendolyn	12813 Sleepytime	Crosby	TX	77532
Walker, Mr. Kenneth Earl	306 Cypress Ave.	Crosby	TX	77532
Walker, Ms. LaWanda S.	12813 Sleepytime	Crosby	TX	77532
Walker, Ms. Nichelle Chenevert	306 Cypress Ave.	Crosby	TX	77532
West, Ms. Robin	408 Blinkin Ave.	Crosby	TX	77532
Wheeler, Mr. Michael Scott	18831 Sunset Trails Street	Crosby	TX	77532
Wheeler, Mr. Shannan Dee	18831 Sunset Trails Street	Crosby	TX	77532
Williams, Carolyn Marie	555 1/2 E. St. Charles Drive, Apt.	Crosby	TX	77532
Williams, Mr. Clarence	408 Red Oak Ave.	Crosby	TX	77532
Williams, Mr. Lester	408 Red Oak Ave.	Crosby	TX	77532
Williams, Mr. Raymond	211 Reuben White Dr.	Crosby	TX	77532
Williams, Mrs. Taliesia	211 Reuben White Dr.	Crosby	TX	77532
Williams, Ms. Carolyn	555 1/2 E. St. Charles Dr., Apt #2	Crosby	TX	77532
Williams, Ms. Lorraine	207 E. St. Charles Dr.	Crosby	TX	77532
Willis, Jr., Mr. James	P.O. Box 96001	Houston	TX	77213
Willis, Jr., Mr. James	P.O. Box 96001	Houston	TX	77213

Name	Address	City	State	Zip
Willis, Ms. Beverly	P.O. Box 96001	Houston	TX	77213
Yarter, Mr. Cody	4611 Lord Rd.	Crosby	TX	77532

EXHIBIT 2

Downstream Strategies
Ideas that sustain.

Arkema, Inc. Plant Area Sampling

To: Kevin Thompson, Esq.
Thompson Barney Law Firm
kwthompsonwv@gmail.com

From: Marc Glass, Principal

Re: Overview of Arkema Plant Area Sampling
Crosby, TX 77532

Date: October 2, 2017

This memorandum provides an overview of the sampling program for various environmental media conducted near the Arkema, Inc. Plant located at 18000 Crosby Eastgate Road in Crosby, Texas.

I, Marc Glass am a Principal and Senior Scientist at Downstream Strategies, LLC (DS), a Morgantown, West Virginia-based environmental consulting firm, at which I direct the environmental monitoring and remediation program. I am a West Virginia Department of Environmental Protection Licensed Remediation Specialist No. 175, with over seventeen years of direct experience in conducting environmental investigation and site characterization. All sampling was performed by myself or Mr. Chris Bryerman, under my supervision. Mr. Bryerman is a Texas Licensed Professional Geoscientist, TBPG No. 769 with over twenty five years of experience.

The sampling program was initiated on September 4, 2017 and is on-going. All samples are collected according to standard industry practice and standard operating procedures and properly managed under chain-of-custody record for analysis by independent, third-party laboratory analytical service providers. All analytical test methods used for this project are listed in the EPA publication, Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, also known as SW-846. Laboratory service providers for this project are accredited by the State of Texas under the National Environmental Laboratory Accreditation Program (NELAP).

Sincerely,

Marc Glass

Morgantown Location
911 Greenbag Road
Morgantown, WV 26508
304.292.2450

Alderson Location
100 Railroad Avenue
Suite 200
Alderson, WV 24910
304.445.7200

downstreamstrategies.com

EXHIBIT 3

On CD-ROM

EXHIBIT 4
On CD ROM

Vaughn, Lorena

From: christopher.amandes@morganlewis.com
Sent: Friday, October 13, 2017 5:20 PM
To: Jason.Holloman@tceq.texas.gov
Cc: Murdock, James; Bernier, Roberto; Stucky, Marie; Thompson, Steve; Sullivan, Greg; Miles, James; Haas, Craig; Quiroz Guadalupe_TCEQ; derek.mangold@tceq.texas.gov; Craig.Hill@pcs.hctx.net
Subject: Response to emailed questions of October 4 and 6 - Arkema Crosby Facility

You have received 1 secure file from christopher.amandes@morganlewis.com.
Use the secure link below to download.

Mr. Holloman,

This email will provide you access to Arkema Inc.'s response to your emailed questions to Carolyn Hervey on October 4 and the additional questions in your October 6 email following your inspection of the Crosby plant on October 5. The documents being transmitted in this response are NOT Arkema Confidential Business Information, and I have also sent you a separate email with the documents that are Arkema CBI.

Consistent with Arkema's agreement with EPA and Harris County, this email is also being sent to representatives of those agencies so they will have the same access to the documents being produced to TCEQ.

Please let me know if you have any questions or have difficulty accessing the documents.

Chris

Christopher B. Amandes
Morgan, Lewis & Bockius LLP
1000 Louisiana Street, Suite 4000 | Houston, TX 77002
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Assistant: Renetta Parham | +1.713.890.5740 | renetta.parham@morganlewis.com

Secure File Downloads:

Available until: **12 November 2017**

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